

# CHAPTER 1 – TEST PROCEDURES

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The test methods and procedures required for source approval, control and acceptance of liquid asphalt cement, aggregates and hot-mix asphalt mixtures are listed in Table-1.

Although the Materials and Testing Section conducts testing for asphalt cement and aggregate source approval, it is highly recommended that the QC Certified Asphaltic Concrete Plant Technician become familiar with and technically understand these test procedures.

A copy of the applicable test procedure shall be available at the plant for immediate reference. LA DOTD procedures may be obtained from the DOTD Materials and Testing Section. **If needed**, AASHTO and ASTM procedures must be obtained directly from AASHTO and ASTM. In addition, the technician should evaluate the plant test procedure library regularly to make sure it is up-to-date.

Section 501 (Asphaltic Concrete Mixtures) specifies that the contractor shall design and determine optimum asphalt cement content of asphaltic mixtures to comply with AASHTO R 12. This test procedure references the latest edition of the Asphalt Institute's *Mix Design Methods for Asphalt Concrete and Other Hot-Mix Types* (MS-2). Mixtures designed in accordance with Section 501 shall be in compliance with Chapters 3 (Evaluation of Aggregate Gradation), 4 (Volumetric Properties of Compacted Paving), and 5 (Marshall Method of Mix Design). Note that DOTD allows the inclusion of RAP (recycled asphalt pavement) in accordance with Section 501, Table 501-3. The design of Section 501 mixtures with RAP shall be conducted in accordance with Subsection 501.03. (The Appendix of MS-2 [Mix Design Using RAP] will not be used.)

Table 1 is reprinted on the next two pages.

<b>TEST PROCEDURE</b>	<b>DOTD TR</b>	<b>AASHTO</b>	<b>ASTM</b>
<b>Asphalt Cement (Table 1002.1 and 1002.2)</b>			
Rotational Viscosity		TP 48	
Dynamic Shear		TP 5	
Flash Point		T 48	
Solubility		T 44	
Separation of Polymer	TR 326		
Force Ductility Ratio		T 300	
Rolling Thin Film Oven		T 240	
Elastic Recovery		T 301	
Ductility		T 51	
Test on Pressure Aging Vessel Residue		PP 1	
Bending Beam Creep Stiffness		TP 1	
Specific Gravity, $G_b$		T 228	
AC Recovery by Abson (plant requirement)		T 170	
<b>Aggregate</b>			
Sampling of Aggregates	S 301		
Deleterious Material	TR 119		
Foreign Matter in Shell	TR 109		
Unit Weight (for Source Approval)	TR 109		
Polish Value (for Source Approval)		T 278	
Liquid Limit and PI (for Source Approval)	TR 428		
Los Angeles Abrasion (for Source Approval)		T 96	
Sulfate Soundness (for Source Approval)		T 104	
Determination of Moisture Content	TR 403		
Sieve Analysis of Fine and Coarse Aggregate	TR 113		
Sieve Analysis $P_{200}$ by Wash	TR 112		
Sieve Analysis of Mineral Filler	TR 102		
Specific Gravity of Coarse Aggregate, $G_{sb}$		T 85	
Specific Gravity of Fine Aggregate, $G_{sb}$		T 84	
Specific Gravity of Mineral Filler, $G_{sb}$		T 100	
Coarse Aggregate Angularity, (% crushed)	TR 306		
Flat and Elongated Count	TR 119*		D 4791
Fine Aggregate Angularity (Method A)		T 304	
Sand Equivalency	TR 120		

<b>Hot-Mix Asphalt</b>			
Bulk Specific Gravity, $G_{mb}$		T 166	
Maximum Specific Gravity, $G_{mm}$		T 209	
Asphalt Cement Content, $P_b$	TR 323		
Mechanical Analysis of Extracted Aggregate	TR 309	T 30	
Moisture Content of Loose HMA	TR 319		
Degree of Particle Coating (plant requirement)		T 195	
Marshall Mixture Design		R12	
Moisture Sensitivity (Lottman)		T 283	
Mixture Conditioning of HMA Mixtures		PP 2	
Superpave Volumetric Design		PP28	
Density of HMA Gyratory Specimens		TP 4	
Volumetric Analysis of Compacted HMA		PP 19	
Asphalt Cement Draindown			D 6390
Determining Pavement Profile - Profilograph	TR 641		
Dealing with Outlying Observations			E 178
Percent Within Limits Procedure	DOTD Superpave Quality Level Analysis Document		

**Table - 1**

### **Test Methods and Procedures for Hot-Mix Asphalt Design, Control and Acceptance**

**Notes:**

1. The Materials and Testing Section performs asphalt cement testing for source approval. District testing laboratories perform acceptance and verification testing.
2. The Materials and Testing Section performs source approval for coarse aggregates (QPL 2). District laboratories determine source acceptance of fine aggregate (non-QPL).
3. Subsection 1003.06 of the *Standard Specifications* defines coarse aggregate as all material retained on or above the No. 4 (4.75mm) sieve. Fine aggregate is defined as all material passing the No. 4 (4.75mm) sieve.
4. For Marshall HMA design (Section 501), density and voids analysis shall be in accordance with Chapter 4 of the Asphalt Institute *Mix Design Methods for Asphalt Concrete* (MS-2).

*\* To be revised*